South Harpswell Quadrangle, Maine

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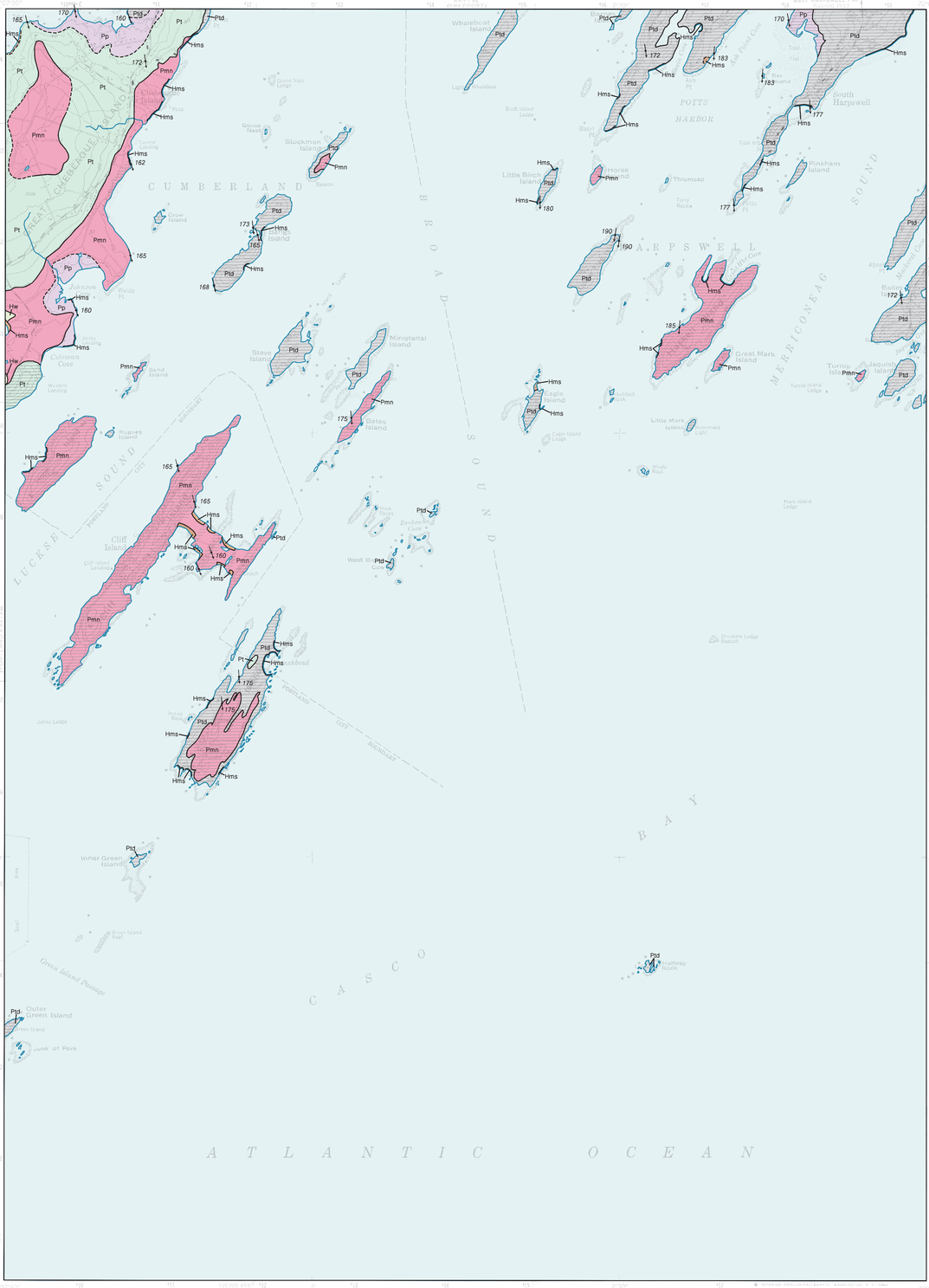
For additional information,
see Open-File Report 99-131.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by Alexa A. Bernotavicz and Mark Dubois completed during the 1994 field season; funding for this work provided by the U. S. Geological Survey COGEOMAP program. Data supplied in part by M. Bryant, J. M. Clinch, A.M. Hussey, II, and W. B. Thompson. Geologic unit designations and contacts revised and matched to adjacent quadrangles in 1999 by MGS geologists.

SCALE 1 : 24,000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey South Harpswell quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

HOLOCENE

Hw - **Wetland** - Silt, clay, sand, muck, and/or peat. Deposited in poorly drained areas.

Hms - **Marine shoreline deposits** - Modern beach deposits consisting of sand, pebbles, and cobbles. Formed by the reworking of older surficial sediments by the ocean.

PLEISTOCENE

Pmn - **Marine nearshore deposits** - Deposits of sand, interbedded with gravel and silt. Formed as a result of erosion and reworking of surficial sediments during the late-glacial regression of the sea. Occurs as a thin cover over bedrock or older glacial deposits.

Pp - **Presumpscot Formation** - Fine-grained, gray to bluish-gray silt and clay. Deposited during the late-glacial marine submergence of the coastal zone. Occurs as a blanket deposit over bedrock and older glacial deposits.

Pt - **Till** - Poorly sorted sediments with a compact matrix deposited directly by the action of glacial ice. Consists of a heterogeneous mixture of clay, silt, sand, gravel and boulders. Occurs as thin deposits over bedrock.

Ptd - **Thin drift, undifferentiated** - Thin, patchy cover of till and/or nearshore deposits overlying bedrock.

Small unmapped island

Thin drift area - Black areas are individual bedrock outcrops with little or no surficial sediment cover. Ruled pattern indicates areas of abundant bedrock outcrop and/or areas where the surficial sediments are generally less than 10 ft (3 m) thick.

Contact - Boundary between map units. Dashed where location is uncertain or inferred.

135 **Glacial striation locality** - Includes striations and grooves as well as other related ice-flow indicators on bedrock outcrops. Dot indicates point of observation.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to humanactivity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Bernotavicz, A., and Dubois, M., 1999, Surficial geology of the South Harpswell 7.5-minute quadrangle, Cumberland County, Maine: Maine Geological Survey, Open-File Report 99-131, 3 p.

2. Bernotavicz, A., and Dubois, M., 1999, Surficial materials of the South Harpswell quadrangle, Maine: Maine Geological Survey, Open-File Map 99-40.

3. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)

4. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.

5. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.